

Amendments to the Claims:

Claims 1-71 **(Canceled)**

72. **(New)** A fuel gasification system comprising:

a gasification chamber for fluidizing a high-temperature fluidizing medium therein to form a gasification chamber fluidized bed having an interface, and gasifying a fuel in said gasification chamber fluidized bed; and

a char combustion chamber for fluidizing a high-temperature fluidizing medium therein to form a char combustion chamber fluidized bed having an interface, and combusting char generated by gasification in said gasification chamber in said char combustion chamber fluidized bed to heat said fluidizing medium, characterized in that:

a first energy recovery device is provided for using gases generated by said gasification chamber as a fuel;

said gasification chamber and said char combustion chamber are divided from each other by a first partition wall for preventing gases from flowing therebetween upwardly of the interfaces of the respective fluidized beds;

said first partition wall has a first opening provided in a lower portion thereof and serves said first opening as a communication between said gasification chamber and said char combustion chamber, for allowing the fluidizing medium heated in said char combustion chamber to move from said char combustion chamber via said first opening into said gasification chamber.

73. **(New)** A fuel gasification system according to claim 72, characterized in that:

said gasification chamber and said char combustion chamber are divided from each other by a second partition wall for preventing gases from flowing therebetween upwardly of the interfaces of the respective fluidizing beds, said second partition wall having a second opening provided in a lower portion thereof and serving said second opening as a communication

between said gasification chamber and said char combustion chamber, for allowing the fluidizing medium heated to move from said gasification chamber via said second opening into said char combustion chamber.

74. **(New)** A fuel gasification system according to claim 72, wherein said char combustion chamber is provided with a heat recovery chamber.

75. **(New)** A fuel gasification system according to claim 72, further comprising:
a boiler for being supplied with the gases used as fuel for said first energy recovery device and combustion gases from said char combustion chamber.

76. **(New)** A fuel gasification system according to claim 75, characterized in that said boiler combusts another fuel than said gases supplied thereto.

77. **(New)** A fuel gasification system according to claim 72, characterized in that:
said gasification chamber and said char combustion chamber are pressurized to a pressure higher than an atmospheric pressure, further comprising:
a second energy recovery device driven by combustion gases from said char combustion chamber; and
a boiler for being supplied with the gases from said first energy recovery device and combustion gases from said second energy recovery device.

78. **(New)** A fuel gasification system according to claim 77, characterized in that said boiler combusts another fuel than said gases supplied thereto.

79. **(New)** A fuel gasification system according to claim 72, characterized in that a boiler is repowered by supplying combustion gases generated in said fuel gasification system to said boiler.

80. **(New)** A fuel gasification system comprising:

- a gasification chamber for fluidizing a high-temperature fluidizing medium therein to form a gasification chamber fluidized bed having an interface, and gasifying a fuel in said gasification chamber fluidized bed; and
- a char combustion chamber for fluidizing a high-temperature fluidizing medium therein to form a char combustion chamber fluidized bed having an interface, and combusting char generated by gasification in said gasification chamber in said char combustion chamber fluidized bed to heat said fluidizing medium and generate combustion gases characterized in that;
- a topping combustor is provided for combusting combustible gases generated in said gasification chamber to heat said combustion gases generated in said char combustion chamber; and
- an energy recovery device is provided for recovering energy from the combustion gases heated in said topping combustor;
- said gasification chamber and said char combustion chamber are pressurized to a pressure higher than an atmospheric pressure;
- said gasification chamber and said char combustion chamber are divided from each other by a first partition wall for preventing gases from flowing therebetween upwardly of the interfaces of the respective fluidized beds;
- said first partition wall has a first opening provided in a lower portion thereof and serves said first opening as a communication between said gasification chamber and said char combustion chamber, for allowing the fluidizing medium heated in said char combustion chamber to move from said char combustion chamber via said first opening into said gasification chamber.

81. **(New)** A fuel gasification system according to claim 80, characterized in that:
said gasification chamber and said char combustion chamber are divided from each other by a second partition wall for preventing gases from flowing therebetween extending vertically upwardly from the interfaces of the respective fluidized beds, said second partition wall having a second opening provided in a lower portion thereof and serving said second opening as a communication between said gasification chamber and said char combustion chamber, for allowing the fluidizing medium heated to move from said gasification chamber via said second opening into said char combustion chamber.

82. **(New)** A fuel gasification system according to claim 80, wherein said char combustion chamber is provided with a heat recovery chamber; and
said gasification chamber and said heat recovery chamber are divided from each other or are not in contact with each other so that gases will not flow directly therebetween.

83. **(New)** A fuel gasification system according to claim 80, further comprising:
a boiler for being supplied with the gases where the energy is recovered by said energy recovery device.

84. **(New)** A fuel gasification system according to claim 83, characterized in that said boiler combusts another fuel than said gases supplied thereto.

85. **(New)** A fuel gasification system according to claim 80, characterized in that a boiler is repowered by supplying combustion gases generated in said fuel gasification system to said boiler.

86. **(New)** A gasification furnace having, in one fluidized-bed furnace, a gasification chamber for pyrolysis gasifying a fuel, a char combustion chamber for combusting char, characterized in that:

a heat recovery chamber is provided for recovering heat in a bed, with a high-temperature fluidizing medium in the char combustion chamber being supplied as a heat medium for supplying a heat source for pyrolysis gasifying the fuel to the gasification chamber,

said gasification chamber and said heat recovery chamber are fully divided from each other by a partition wall extending from a furnace bottom to a ceiling or positioned so as not to be in contact with each other;

said gasification chamber and said char combustion chamber are fully divided from each other by a partition wall above the interface of the fluidized bed, said partition wall having an opening provided therein near the furnace bottom; and

a fluidizing medium moves from said char combustion chamber via said opening into said gasification chamber.

87. **(New)** A gasification furnace according to claim 86, characterized in that:

a settling char combustion chamber is provided in said char combustion chamber in contact with said partition wall, and a weakly fluidized region is developed in said settling char combustion chamber;

a strongly fluidized region is developed in said gasification chamber in contact with said partition wall for thereby moving the fluidizing medium from the char combustion chamber into the gasification chamber.

88. **(New)** A gasification furnace according to claim 86, characterized in that:

said partition wall between the gasification chamber and the char combustion chamber has a second opening, different from said opening, provided therein near the furnace bottom, for

moving the fluidizing medium and the char from the gasification chamber via the second opening into the char combustion chamber.

89. **(New)** A gasification furnace according to claim 86, characterized in that:
a strongly fluidized region and a weakly fluidized region are developed in each of said char combustion chamber, said settling char combustion chamber, and said gasification chamber, for generating an internal revolving flow of the fluidizing medium in each of the chambers.

90. **(New)** A gasification furnace according to claim 86, characterized in that:
said heat recovery chamber is disposed in contact with the strongly fluidized region in said char combustion chamber, said heat recovery chamber and said char combustion chamber have openings near the furnace bottom and are divided from each other by a partition wall whose upper end reaches a position near the interface of the fluidized bed, the arrangement being such that a fluidized state in the char combustion chamber near the partition wall is relatively stronger than a fluidized state in the heat recovery chamber for generating a force to circulate the fluidizing medium.

91. **(New)** A gasification furnace according to claim 86, characterized in that:
said heat recovery chamber is disposed in contact with the strongly fluidized region in said settling char combustion chamber, said heat recovery chamber and said settling char combustion chamber have openings near the furnace bottom and are divided from each other by a partition wall whose upper end reaches a position near the interface of the fluidized bed, the arrangement being such that a fluidized state in the settling char combustion chamber near the partition wall is relatively stronger than a fluidized state in the heat recovery chamber for generating a force to circulate the fluidizing medium.

92. **(New)** A gasification furnace according to claim 86, characterized in that a fluidizing gas in said gasification chamber comprises a gas free of any oxygen, such as water steam or the like.

93. **(New)** A gasification furnace according to claim 86, characterized in that at least one of the furnace bottoms of said gasification chamber, said char combustion chamber, and said heat recovery chamber is tilted along flows of the fluidizing medium near the furnace bottom.

94. **(New)** A gasification furnace according to claim 86, characterized in that the temperature of the gasification chamber is adjusted by controlling a fluidized state of a weakly fluidized region in said char combustion chamber in contact with said gasification chamber.

95. **(New)** A gasification furnace according to claim 86, characterized in that the temperature of the gasification chamber is adjusted by controlling a fluidized state of a weakly fluidized region in said gasification chamber.

96. **(New)** A gasification furnace according to claim 86, characterized in that a fluidizing gas in said chamber combustion chamber comprises a gas free of any oxygen, such as water steam or the like.

97. **(New)** A gasification furnace having a gasification chamber for pyrolyzing and gasifying a fuel to produce combustible gas and char and a char combustion chamber for combusting the char supplied from said gasification chamber, characterized in that:

said gasification chamber and said char combustion chamber are fully divided from each other by a partition wall above the interface of the fluidized bed, said partition wall having an opening below said interface of said fluidized bed;

a strongly fluidized region and a weakly fluidized region are developed in at least one of said char combustion chamber and said gasification chamber, for generating an internal revolving flow of the fluidizing medium in said at least one of the chambers; and

a fluidizing medium moves from said gasification chamber into said char combustion chamber through said opening.

98. **(New)** A gasification furnace according to claim 97, characterized in that said opening is located below an upper surface of a dense bed of said fluidizing medium so as to be submerged in said dense bed.

99. **(New)** A gasification furnace according to claim 97, characterized in that said opening is located near the furnace bottom of said gasification furnace.

100. **(New)** A gasification furnace according to claim 97, further comprising:
a heat recovery chamber;
said gasification chamber and said heat recovery chamber being divided from each other or not being in contact with each other so that gases will not flow directly therebetween.

101. **(New)** A gasification furnace according to claim 97, characterized in that:
said partition wall has another opening below said interface of said fluidized bed, and the fluidizing medium moves from said char combustion chamber into said gasification chamber through said another opening.

102. **(New)** A gasification furnace according to claim 97, further comprising a first energy recovery device for using gases generated by said gasification chamber as a fuel.

103. **(New)** A gasification furnace according to claim 102, further comprising a second energy recovery device for recovering energy from combustion gases from said char combustion chamber.

104. **(New)** A gasification furnace according to claim 103, further comprising a boiler for being supplied with the gases from which energy has been recovered by at least one of said first energy recovery device and said second energy recovery device.

105. **(New)** A gasification furnace according to claim 104, characterized in that said boiler combusts another fuel than said gases supplied thereto.

106. **(New)** A gasification furnace according to claim 97, further comprising a combustion chamber for mixing and combusting gases generated in said gasification chamber and combustion gases generated in said char combustion chamber.

107. **(New)** A gasification furnace having a gasification chamber for pyrolyzing and gasifying a fuel to produce combustible gas and char and a char combustion chamber for combusting the char supplied from said gasification chamber, characterized in that:

said gasification chamber and said char combustion chamber are fully divided from each other by a partition wall above the interface of the fluidized bed, said partition wall having an opening below said interface of said fluidized bed; and

a weakly fluidized region is formed near said opening in said gasification chamber by supplying a fluidizing gas, and a strongly fluidized region is formed near said opening in said char combustion chamber by supplying a fluidizing gas.

108. **(New)** A gasification furnace according to claim 107, characterized in that said opening is located below an upper surface of a dense bed of said fluidizing medium so as to be submerged in said dense bed.

109. **(New)** A gasification furnace according to claim 107, characterized in that said opening is located near the furnace bottom of said gasification furnace.

110. **(New)** A gasification furnace according to claim 107, characterized in that a strongly fluidized region and a weakly fluidized region are developed in at least one of said char combustion chamber and said gasification chamber, for generating an internal revolving flow of the fluidizing medium in said at least one of the chambers.

111. **(New)** A gasification furnace according to claim 110, characterized in that the temperature of the gasification chamber is adjusted by controlling a fluidized state of said weakly fluidized region in said char combustion chamber in contact with said gasification chamber.

112. **(New)** A gasification furnace according to claim 107, characterized in that:
said partition wall has another opening below said interface of said fluidized bed, and the fluidizing medium moves from said char combustion chamber into said gasification chamber through said another opening.

113. **(New)** A gasification furnace according to claim 112, characterized in that:
a strongly fluidized region is formed near said another opening in said gasification chamber, and a weakly fluidized region is formed near said another opening in said char combustion chamber.

114. **(New)** A gasification furnace according to claim 107, characterized in that a settling char combustion chamber is provided by providing a partition wall for partitioning a region including said weakly fluidized region in said char combustion chamber from other region in said char combustion chamber.

115. **(New)** A gasification furnace according to claim 107, further comprising:
a heat recovery chamber;
said gasification chamber and said heat recovery chamber being divided from each other or not being in contact with each other so that gases will not flow directly therebetween.

116. **(New)** A gasification furnace according to claim 107, characterized in that at least one of the furnace bottoms of said gasification chamber, said char combustion chamber, and said heat recovery chamber are tilted.

117. **(New)** A gasification furnace according to claim 107, characterized in that the temperature of the gasification chamber is adjusted by controlling a fluidized state of said weakly fluidized region in said gasification chamber.

118. **(New)** A gasification furnace having a gasification chamber for pyrolyzing and gasifying a fuel to produce combustible gas and char, characterized in that:

a fluidizing medium is fluidized to form a fluidized bed having an interface;
an internal revolving flow of the fluidizing medium is formed in said gasification chamber;

said fluidizing medium is withdrawn from said gasification chamber at a position below said interface of said fluidized-bed; and

said fluidizing medium is returned to said gasification chamber at a position below said interface.

119. **(New)** A gasification furnace according to claim 118, characterized in that said position is located below an upper surface of a dense bed of said gasification furnace.

120. **(New)** A gasification furnace according to claim 118, characterized in that said position is located near the furnace bottom of said gasification furnace.

121. **(New)** A gasification furnace according to claim 118, characterized in that:
said withdrawn fluidizing medium is supplied together with char to a char combustion chamber, and the char is combusted in said char combustion chamber.

122. **(New)** A gasification furnace to claim 121, characterized in that:
a settling char combustion chamber is provided in said char combustion chamber, and
said withdrawn fluidizing medium is returned to said gasification chamber after said fluidizing medium passes through said settling char combustion chamber.

123. **(New)** A gasification furnace according to claim 121, characterized in that an internal revolving flow of said fluidizing medium is formed in said char combustion chamber.

124. **(New)** A gasification furnace according to claim 123, characterized in that:
said fluidizing medium is withdrawn from said char combustion chamber at a position below said interface of said fluidized-bed; and
said fluidizing medium is returned to said char combustion chamber at a position below said interface.

125. **(New)** A gasification furnace according to claim 118, characterized in that a strongly fluidizing region and a weakly fluidized region are developed in said gasification

chamber for generating said internal revolving flow of said fluidizing medium in said gasification chamber.

126. **(New)** A gasification furnace according to claim 118, characterized in that:
a settling gasification chamber is provided in said gasification chamber, and said fluidizing medium is withdrawn from said gasification chamber after said fluidizing medium passes through said settling gasification chamber.

127. **(New)** A gasification furnace according to claim 118, characterized in that a combustible material supplying port is provided above said fluidized-bed for supplying combustible material to said fluidized-bed.

128. **(New)** A gasification furnace according to claim 118, characterized in that an incombustible material discharging port is provided for discharging incombustible material contained in said combustible material from said gasification furnace.

129. **(New)** A gasification furnace according to claim 118, characterized in that a heat recovery chamber is provided to recover heat from said fluidizing medium.

130. **(New)** A gasification furnace according to claim 118, characterized in that gasification agent comprising a gas containing no-oxygen molecule is supplied to said gasification chamber.

131. **(New)** A gasification furnace according to claim 118, characterized in that an oxidizing agent containing oxygen molecule is supplied to said gasification chamber.

132. **(New)** A gasification furnace according to claim 118, characterized in that a fuel supplying port is provided for supplying auxiliary fuel to said char combustion chamber.

133. **(New)** A gasification furnace according to claim 118, characterized in that:
said combustible gas and said char discharged from said gasification chamber are introduced into a slagging furnace, and ashes contained in said combustible gas and said char are melted in said slagging furnace.

134. **(New)** A gasification furnace according to claim 118, characterized in that:
ashes are recovered from exhaust gas discharged from said char combustion chamber, and the recovered ashes are introduced into said slagging furnace.

135. **(New)** A gasification method for pyrolizing and gasifying a fuel, characterized by:
supplying a fuel to a fluidized-bed gasification chamber;
pyrolizing and gasifying the fuel to produce combustible gas and char;
settling the produced char by an internal revolving flow of the fluidizing medium;
discharging the settled char and the fluidizing medium from said gasification chamber;
combusting the char accompanied by said fluidizing medium discharged from said gasification chamber; and
returning said fluidizing medium to said gasification chamber at a position below an interface of said fluidized-bed of said gasification chamber after said char is combusted.

136. **(New)** A gasification method according to claim 135, characterized in that said position is located below an upper surface of a dense bed of said gasification chamber.

137. **(New)** A gasification method according to claim 135, characterized in that said position is located near the furnace bottom of said gasification chamber.

138. **(New)** A gasification method according to claim 135, characterized in that an auxiliary fuel is supplied to heat said fluidizing medium when said char is combusted.

139. **(New)** A gasification method according to claim 135, characterized in that said pyrolyzing and gasifying the fuel is carried out by using a gas containing no-oxygen molecule as a gasifying agent.

140. **(New)** A gasification method according to claim 135, characterized in that said combusting the char is carried out by using a gas containing oxygen molecule.

141. **(New)** A gasification method according to claim 135, characterized in that said internal revolving flow of the fluidizing medium is formed by changing the speed of the fluidizing gas at at least two areas.

142. **(New)** A gasification method according to claim 135, characterized in that said discharging the settled char and the fluidizing medium from said gasification chamber is carried out at a weakly fluidizing region of said fluidized-bed in said gasification chamber.

143. **(New)** A gasification method according to claim 135, characterized in that said returning said fluidizing medium to said gasification chamber is carried out at a strongly fluidizing region of said fluidized-bed in said gasification chamber.

144. **(New)** A gasification method according to claim 135, characterized in that said pyrolyzing and gasifying the fuel is carried out at a pressure higher than an atmospheric pressure.

145. **(New)** A gasification furnace having a gasification chamber for pyrolyzing and gasifying a fuel to produce combustible gas and char and a char combustion chamber for combusting the char supplied from said gasification chamber, characterized in that:

said gasification chamber and said char combustion chamber are divided from each other by a partition wall above the interface of the fluidized bed;

at least one of said gasification chamber and said char combustion chamber is divided by another partition wall so as to form at least one of a settling gasification chamber and a settling char combustion chamber;

said partition wall has an opening for allowing a fluidizing medium which has entered from said gasification chamber or said char combustion chamber into said settling gasification chamber or said settling char combustion chamber beyond said another partition wall, to pass therethrough; and

the furnace bottom of said settling gasification chamber or said settling char combustion chamber is tilted toward said opening.

146. **(New)** A gasification furnace according to claim 145, characterized in that said partition wall has a lower end which is submerged in a dense bed.

147. **(New)** A gasification furnace according to claim 145, characterized in that said another partition wall extends to the furnace bottom.

148. **(New)** A gasification furnace according to claim 145, characterized in that said another partition wall has a height higher than an upper surface of a dense bed.

149. **(New)** A gasification furnace according to claim 145, characterized in that:

an upward flow of the fluidizing medium is formed in the fluidized bed which contacts a reverse surface of said another partition wall opposite to a surface facing said settling gasification chamber or said settling char combustion chamber.

150. **(New)** A gasification furnace according to claim 145, characterized in that a fluidizing gas is supplied to said settling gasification chamber or said settling char combustion chamber.

151. **(New)** A gasification furnace according to claim 145, characterized in that said opening is provided near the furnace bottom.

152. **(New)** A gasification furnace according to claim 145, characterized in that an internal revolving flow of the fluidizing medium is formed in at least one of said gasification chamber and said char combustion chamber.

153. **(New)** A gasification furnace according to claim 145, characterized in that the furnace bottom of said gasification chamber is tilted toward an incombustible material discharging port.

154. **(New)** A gasification furnace according to claim 145, characterized in that the velocity of a fluidizing gas supplied from a location below said opening of said partition wall to a location near said opening of said partition wall in said gasification chamber or said char combustion chamber is larger than the velocity of a fluidizing gas supplied to said settling gasification chamber or said settling char combustion chamber.

155. **(New)** A gasification furnace having a gasification chamber for pyrolyzing and gasifying a fuel to produce combustible gas and char and a char combustion chamber for combusting the char supplied from said gasification chamber, characterized in that:

said gasification chamber and said char combustion chamber are divided from each other by a partition wall above the interface of the fluidized bed;

said partition wall has an opening for allowing a fluidizing medium to flow from said gasification chamber to said char combustion chamber and another opening for allowing a fluidizing medium to flow from said char combustion chamber to said gasification chamber;

a gas diffuser is provided below said gasification chamber to supply a fluidizing gas to a location in said gasification chamber near said opening for allowing the fluidizing medium to flow from said gasification chamber to said char combustion chamber, the velocity of said fluidizing gas being smaller than the velocity of a fluidizing gas supplied to a location in said char combustion chamber near said opening; and

a gas diffuser is provided below said char combustion chamber to supply a fluidizing gas to a location in said char combustion chamber near said opening for allowing the fluidizing medium to flow from said char combustion chamber to said gasification chamber, the velocity of said fluidizing gas being smaller than the velocity of a fluidizing gas supplied to a location in said gasification chamber near said opening.

156. **(New)** A gasification furnace according to claim 155, characterized in that said partition wall has a lower end which is submerged in a dense bed.

157. **(New)** A gasification furnace according to claim 155, characterized in that an internal revolving flow of the fluidizing medium is formed in at least one of said gasification chamber and said char combustion chamber.

158. **(New)** A gasification furnace according to claim 155, characterized in that the furnace bottom of said gasification chamber is tilted toward an incombustible material discharging port.

159. **(New)** A gasification furnace according to claim 155, characterized in that said velocity is fluidizing velocity.